organosilane or organosiloxane to produce a film substantially free of organic fluorine.

REMARKS

By this Amendment, claims 18, 27, 47, 57 and 72 are amended. Claims 1-17 and 70-71 have been withdrawn from consideration pursuant to a restriction requirement. Claims 1-75 are pending.

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

Attached hereto is a paper entitled "Amendment Appendix" showing the marked-up version of the changes made by this Amendment.

Restriction Requirement

Applicants hereby affirm their prior election with traverse of Group II, claims 18-69 and 72-75, reserving their rights under 35 USC § 121 to file a divisional application for the nonelected claims.

Applicants respectfully traverse the restriction requirement on the following basis. A restriction requirement is proper only where there is a serious burden on the Patent Office to examine all of the claims in a single application, even when it appears that appropriate reasons exist for a restriction requirement. MPEP §803. Applicants respectfully submit that there would be no serious burden on the Patent Office to examine in this application all of the present claims because the subject matter of the claims is sufficiently related that a search of the claims in any one Group

would encompass a search for the subject matter of the other Group. Thus, the restriction requirement is improper and should not be maintained.

Reconsideration and withdrawal of the restriction requirement are respectfully requested.

Claim Objections

Reconsideration and withdrawal of the objections to claims 18, 47 and 57 are respectfully requested in view of the foregoing amendments.

Rejections under Section 112

The rejection of claims 27-28, 47 and 73-75 under 35 U.S.C. § 112 is respectfully traversed.

The rejection of claims 27-28 is obviated by the foregoing amendment of claim 27.

Claim 47 is rejected because "it is not clear what 'mechanical properties' are referred to and what constitutes 'superior' as superior is relative to an intended application." Claim 47 is amended to obviate any basis for the rejection by reciting an increase in specific mechanical properties, based on the original disclosure at page 9, line 22 to page 10, line 3:

> Films of the invention have improved properties relative to OSG materials. A given OFSG material will have mechanical properties superior to those of an OSG material of equivalent stoichiometry, but for the lack of any fluorine in the OSG material. For example, preferred embodiments of OFSG materials of the invention have a dielectric constant of less than 3.5, more preferably less than 3.0. In certain embodiments, the film has a dielectric constant in

the range from 2.8 to 3.2, with a modulus of elasticity greater than 10 GPa and/or a nanoindentation hardness greater than 1.5 GPa.

Claims 73-75 are not amended, as it is clear that the improvement is relative to the organosilica glass film described in the preamble of the Jepson claim from which these claims depend, claim 72. Thus, the "starting point" or reference against which improvement is gauged is an organosilica glass film produced without a "source of inorganic fluorine codeposit[ing] inorganic fluorine during at least a portion of said deposition of the organosilane or organosiloxane to produce a film substantially free of organic fluorine." An ordinarily skilled artisan would be able to determine whether a method literally falls within the scope of claims 73-75 by simply comparing the specified properties of a film prepared in the absence of the inorganic fluorine source with a film prepared with the inorganic fluorine source. If, for example, the latter film has greater thermal stability than the former film, the process for preparing the latter film is within the literal scope of claim 74.

Accordingly, reconsideration and withdrawal of the rejection of claims 27-28, 47 and 73-75 under 35 U.S.C. § 112 are respectfully requested.

Rejections under 35 U.S.C. § 102

Claims 72-75 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,068,884 to Rose et al. This rejection is respectfully traversed.

Rose et al. fails to identically disclose all the limitations of claims 72-75, which require an improved method for producing an organosilica glass

film, wherein a source of inorganic fluorine codeposits inorganic fluorine in a presence of an oxygen-providing gas during at least a portion of said deposition of the organosilane or organosiloxane to produce a film substantially free of organic fluorine. Although Rose et al. at column 6, lines 40-44, teaches the deposition of fluorine films, there is no teaching of the deposition of organosilica glass films substantially free of organic fluorine. Rose et al. teaches the use of organic fluorine sources (e.g., CF_4) as well as inorganic fluorine sources. There are no embodiments in Rose et al. wherein solely inorganic fluorine sources are used, such that the resulting film would be substantially free of organic fluorine. Thus, Rose et al. fails to anticipate the invention of claims 72-75.

Accordingly, reconsideration and withdrawal of the rejection of claims 72-75 under 35 U.S.C. § 102(e) over Rose et al. are respectfully requested.

Claims 72-75 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,410,463 to Matsuki. This rejection is respectfully traversed.

Matsuki fails to identically disclose all the limitations of claims 72-75, which require an improved method for producing an organosilica glass film, wherein a source of inorganic fluorine codeposits inorganic fluorine in a presence of an oxygen-providing gas during at least a portion of said deposition of the organosilane or organosiloxane to produce a film substantially free of organic fluorine. In particular, Matsuki does not disclose or suggest the use of an oxygen-providing gas.

Accordingly, reconsideration and withdrawal of the rejection of claims

72-75 under 35 U.S.C. § 102(e) over Matsuki are respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 18-21, 25, 26, 29, 30, 36, 39-47, 53-66 and 72-75 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious by U.S. Patent No. 6,147,009 to Grill et al. This rejection is respectfully traversed.

Grill et al., like Rose et al., fails to appreciate the significance of depositing fluorine as inorganic fluorine rather than organic fluorine. Thus, Grill et al. fails to meet all the limitations of base claim 1 (which requires that substantially none of the fluorine be bonded to the carbon) and base claim 72 (which requires production of a film substantially free of organic fluorine), and does not render the claims *prima facie* obvious.

Moreover, the unexpected improvement in film properties resulting from incorporating only inorganic fluorine into the film is further evidence of the non-obviousness of the invention.

Accordingly, reconsideration and withdrawal of the rejection of claims 18-21, 25, 26, 29, 30, 36, 39-47, 53-66 and 72-75 under 35 U.S.C. § 103(a) over Grill et al. are respectfully requested.

Claims 22-24, 27-28, 31-35, 37-38 and 68-69 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious by Grill et al. in view of Rose et al. This rejection is respectfully traversed.

Grill et al. fails to render the claimed invention obvious for at least the reasons discussed above. Rose et al. fails to remedy the aforementioned deficiency of Grill et al., since Rose et al. also fails to teach the use of

solely inorganic fluorine sources.

Moreover, the unexpected improvement in film properties resulting from incorporating only inorganic fluorine into the film is further evidence of the non-obviousness of the invention.

Accordingly, reconsideration and withdrawal of the rejection of claims 22-24, 27-28, 31-35, 37-38 and 68-69 under 35 U.S.C. § 103(a) over Grill et al. in view of Rose et al. are respectfully requested.

Claims 48-52 and 67 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious by Grill et al. in view of Rose et al. and Lee et al. This rejection is respectfully traversed.

The proposed combination of Grill et al. in view of Rose et al. fails to render the claimed invention obvious for at least the reasons discussed above. Lee et al. fails to remedy the aforementioned deficiency of Grill et al., since Lee et al. also fails to teach the use of solely inorganic fluorine sources in the production of fluorinated organosilica glass films.

Moreover, the unexpected improvement in film properties resulting from incorporating only inorganic fluorine into the film is further evidence of the non-obviousness of the invention.

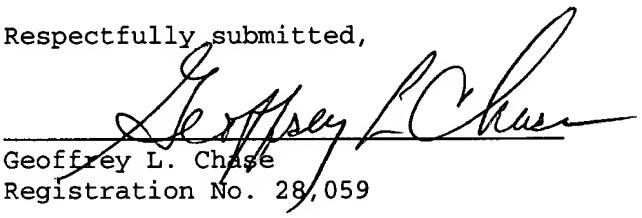
Accordingly, reconsideration and withdrawal of the rejection of claims 48-52 and 67 under 35 U.S.C. § 103(a) over Grill et al. in view of Rose et al. and Lee et al. are respectfully requested.

For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully

requested.

Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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AMENDMENT APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

18. (Amended) A chemical vapor deposition method [for producing the film of claim 1, said method] comprising:

a. providing a substrate within a vacuum chamber;

b. introducing into the vacuum chamber gaseous reagents including a fluorine-providing gas, an oxygen-providing gas and at least one precursor gas selected from the group consisting of an organosilane and an organosiloxane; and

c. applying energy to the gaseous reagents in said chamber to induce reaction of the gaseous reagents and to form [the film] on the substrate a film represented by the formula $Si_vO_wC_xH_yF_z$, where v+w+x+y+z = 100%, v is from 10 to 35 atomic%, w is from 10 to 65 atomic%, y is from 10 to 50 atomic%, x is from 2 to 30 atomic%, and z is from 0.1 to 15 atomic%, wherein substantially none of the fluorine is bonded to the carbon.

27. (Amended) The method of claim 18, wherein at least one of the [organosilane]at least one precursor gas and the fluorine-providing gas is a cyclic or linear organosiloxane, which contains at least one Si-F bond.

47. (Amended) The method of claim 18, wherein the film has [superior mechanical properties to] a modulus of elasticity and a nanoindentation hardness greater than those of an organosilica glass[OSG] film stoichiometrically equivalent to the film but for the absence of fluorine in the organosilica glass[OSG] film.

57. (Amended) The method of claim 18, wherein said energy is applied by at least one of [a] thermal, plasma, pulsed plasma, helicon plasma, high

density plasma, inductively coupled plasma, and remote plasma techniques.

72. (Amended) In a method for producing an organosilica glass film comprising chemical vapor deposition of organosilane or organosiloxane to produce the organosilica glass film, the improvement wherein a source of inorganic fluorine codeposits inorganic fluorine in a presence of an oxygen-providing gas during at least a portion of said deposition of the organosilane or organosiloxane to produce a film substantially free of organic fluorine.